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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,767	09/15/2003	Toru Yokohata	2500.68328	1489
7590	12/14/2004			
Patrick G. Burns, Esq. GREER, BURNS & CRAIN, LTD. Suite 2500 300 South Wacker Dr. Chicago, IL 60606				
			EXAMINER FIGUEROA, NATALIA	
			ART UNIT 2651	PAPER NUMBER
DATE MAILED: 12/14/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,767

Applicant(s)

YOKOHATA, TORU

Examiner

Natalia Figueroa

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 13-18 is/are rejected.
- 7) ☒ Claim(s) 6-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/15/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on September 15, 2003 (09/15/2003) is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

2. The background of the invention (page 2, 2nd paragraph) is objected to because it lacks a period (punctuation mark) in the last sentence. Correction is required. The objection to the specification will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Ottensen et al (USPN 5,870,241), hereinafter Ottensen.

RE claim 1, Ottensen discloses a method of detecting a protrusion on a recording Medium (abstract), comprising obtaining an angular position signal specifying an angle of rotation of the recording medium from a standard attitude of the recording medium (fig. 3B and col. 3, line 63-col. 4, line 11); obtaining a detection signal output from a collision detector designed to detect a collision between a surface of the recording medium and a flying slider (col. 3, line 35-56); and determining a collision between the surface of the recording medium and the

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flying slider based on the angular position signal and the detection signal (fig. 4b, col. 3, line 35-56 and col. 5, lines 30-39).

RE claim 2, Ottensen further discloses a constant relative speed is set between the surface of the recording medium and the flying slider during the rotation of the recording medium (col. 5, lines 57-65).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ottensen in view of Tani et al (JP 11-110750), hereinafter Tani.

RE claim 3, Ottensen is relied upon for the same reasons of rejection as stated above. Ottensen fails to explicitly teach that said collision detector is designed to detect a sound induced based on a collision between the surface of the recording medium and the flying slider.

However, Tani discloses such on (abstract and [0017]). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to improve the method as disclosed by Ottensen with the above teachings from Tani to include sensor or detector therefore obtaining an electrical signal indicative of an imminent crash or impact with a defect or protrusion hence avoiding the corruption or the loss of data.

RE claim 4, Tani further discloses that said collision detector is an acoustic emission sensor mounted on the flying slider (abstract and [0017]).

RE claim 5, Tani further discloses that said acoustic emission sensor is a piezoelectric element (abstract and [0017]).

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ottensen in view of Allison (USPN 4,322,806).

RE claim 13, Ottensen discloses a detecting apparatus for a protrusion on a recording medium (abstract and col. 5, lines 30-35) and a rotating recording medium (abstract and col. 5, lines 57-65). Ottensen fails to explicitly teach a function generating circuit designed to generate a wave signal of a trigonometric function; a first multiplying circuit designed to multiply a detection signal from an acoustic emission sensor by a sine wave signal so as to generate a first reference signal; a first integration circuit designed to calculate an integral value of the first reference signal over a predetermined number of revolution of the recording medium; a second multiplying circuit designed to multiply a detection signal from the acoustic emission sensor by a cosine wave signal so as to generate a second reference signal; a second integration circuit designed to calculate an integral value of the second reference signal over a predetermined number of revolution of the recording medium; and an addition circuit designed to add outputs from the first and second integration circuits to each other.

However, Allison discloses such generator, multiplying circuits, integration circuits and adder (or averager) in (fig. 1 and disclosure thereof). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to improve the apparatus as disclosed by Ottensen with the above teachings from Allison to include an arithmetic means to process the obtained data from the protrusion detector hence being able to process therefore avoiding the unintentional erasing or overwriting of data.

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7. Claims 14 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ottensen, Allison and further in view of Tani.

RE claim 14, the combination of Ottensen and Allison is relied upon for the same reasons of rejection. Ottensen and Allison fail to explicitly teach that said acoustic emission sensor is a piezoelectric element.

However, Tani discloses such on (abstract and [0017]). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to improve the apparatus as disclosed by Ottensen and Allison with the above teachings from Tani to include sensor or detector therefore obtaining an electrical signal indicative of an imminent crash or impact with a defect or protrusion hence avoiding the corruption or the loss of data.

RE claim 16, Ottensen further discloses a spindle motor generating a driving force for the rotation of the recording medium (col. 3, lines 40-42); a flying slider opposed to a surface of the recording medium mounted on a rotation shaft of the spindle motor (col. 3, lines 42-46), and a controlling circuit designed to control rotation speed of the rotation shaft based on position of the flying slider relative to the rotation shaft of the spindle motor (col. 3, lines 55-62). Tani further discloses said flying slider supporting the acoustic emission sensor (abstract and [0017]).

RE claim 17, the combination of Ottensen and Allison is relied upon for the same reasons of rejection. Ottensen and Allison fail to explicitly teach that said acoustic emission sensor is a piezoelectric element. However, Tani discloses such on (abstract and [0017]).

8. Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ottensen, Allison and Tani and further in view of Sakai et al (JP 09-063050), hereinafter Sakai.

RE claim 15, the combination of Ottensen, Allison and Tani is relied upon for the same reasons of rejection. Ottensen, Allison and Tani fail to explicitly teach that said piezoelectric element is a PZT element.

However, Sakai discloses such material on (abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to improve the apparatus as disclosed by Ottensen, Allison and Tani with the above teachings from Sakai to include a PZT sensor or detector therefore obtaining an electrical signal indicative of an imminent crash or impact with a defect or protrusion hence avoiding the corruption or the loss of data.

RE claim 18, the combination of Ottensen, Allison and Tani is relied upon for the same reasons of rejection. Ottensen, Allison and Tani fail to explicitly teach that said piezoelectric element is a PZT element. However, Sakai discloses such material on (abstract).

Allowable Subject Matter

9. Claims 6-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record, and in particular Ottensen et al (USPN 5,870,241), fails to teach or suggest a method of detecting comprising obtaining an index signal specifying the standard attitude of the recording medium when the angular position signal is generated; generating a sine wave signal based on a period of the index signal and generating a cosine wave signal based on a period of the index signal.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are cited to further show the state of the art with respect to detecting protrusions on a recording medium.

- a) Wang et al (USPN 6,239,951): Discloses a vibration sensor means.
- b) Sundaram (USPN 6,140,714): Discloses a defect detector means.
- c) "Acoustic Sensor for ..." (IBM TDB NB8908328): Discloses an acoustic sensor.
- d) Lewis (USPN 5,666,237): Discloses mapping of asperities in a storage device.

212. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalia Figueroa whose telephone number is (703) 305-1260. The examiner can normally be reached on Monday - Thursday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh N. Tran can be reached on (703) 305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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